



# Wooden Lead Screws

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## SUMMARY

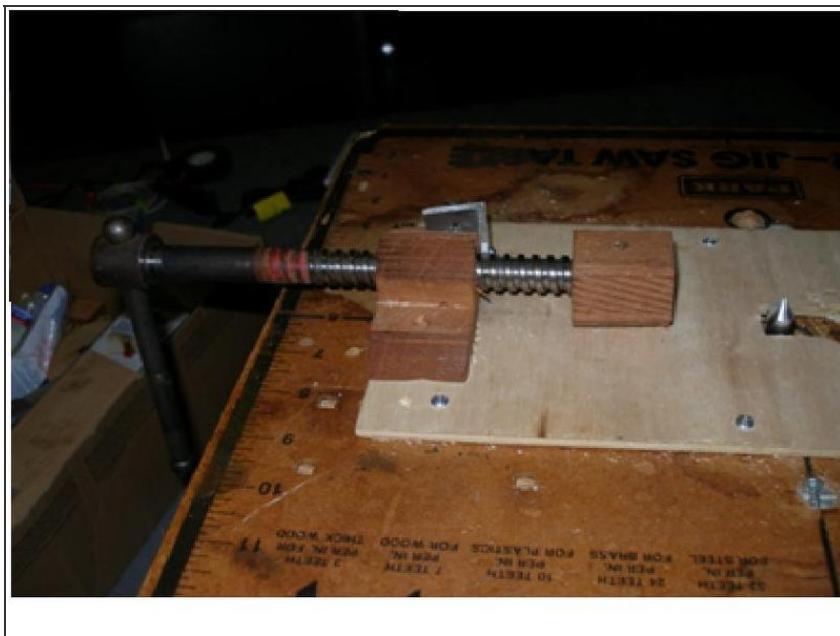
By using a router and a countersink bit, you can make wooden screws of different diameters. The results are pretty good.

## Step 1 — Wooden Lead Screws



- Wooden Screws Part II: As part of my continued exploration of Leonardo Da Vinci mechanisms, I needed to produce several different kinds of lead screws and nuts for my projects. While commercial wood taps and dies are relatively inexpensive, I wanted to make my own, so I could get the right diameter and pitch. During my efforts I tried making several different kinds of taps, but wasn't too successful making the old-fashioned screw boxes. Information on doing this can be found in Roy Underhill's books on woodworking.
- There is another technique for making wooden screws on a wood lathe called "chasing threads" but this takes special equipment and years of experience. Eventually, I built a couple of "screw duplicators" using a table-mounted router and salvaged lead screws, and these worked very well.

## Step 2



- I used the lead screw borrowed from my bench vise, which had about 4.5 threads per inch, for screws made out of 1" poplar dowel. I used scraps of oak, mahogany, and some plywood to build a mechanism that can both feed and rotate the blank through the cutter. A drill press helps make sure the holes drilled are at right angles to the bearing blocks. A small 1/16" hole drilled through the end block and a short length of brass wire are used to pin the end block to the lead screw.
- The whole jig was screwed onto the router table and the height of the router was adjusted for the proper depth of cut.

### Step 3



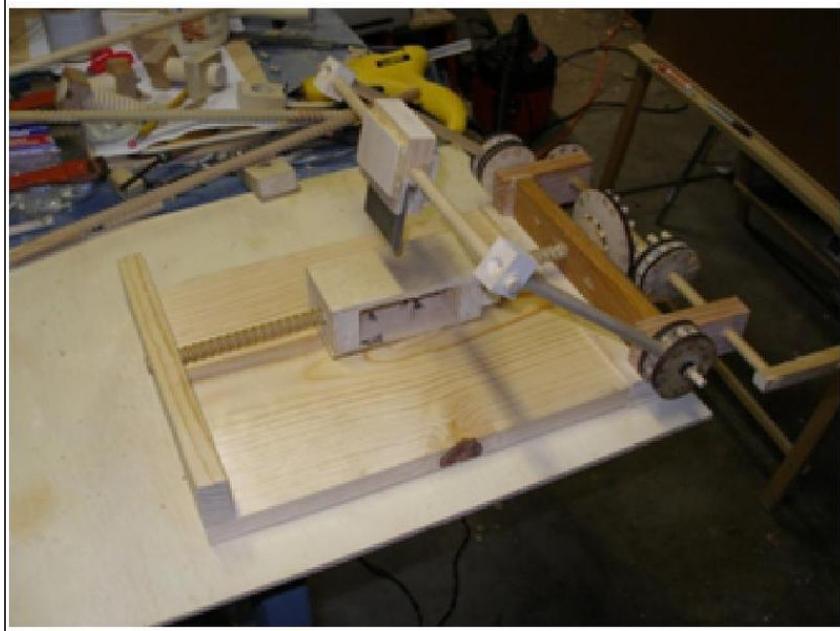
- I used an inexpensive countersink bit in my router and this seemed to give good results. I am sure a carbide "V" cutter would work as well or better. This rig works remarkably well. I've built a second similar rig for producing 0.5 inch screws up to 1 foot in length.

## Step 4



- The method for making taps is explained in detail in this reference(1). An approximate rule of thumb is that you need a piece of square stock 75% of the diameter of the screw you're cutting the nut for. So for a 1" screw, you need a  $\frac{3}{4}$ " square steel rod. These taps work well up to a 1" diameter.
- Briefly, a triangular strip of paper is used to transfer the thread to the stock. This is glued on to the square rod, and then a triangular file is used to notch the work piece. Then file away. It takes about two hours of filing to make a tap.
- For nuts over 1" a tap box is needed. A tap box uses an interna

## Step 5



- Though I had some success making  $\frac{1}{2}$ " nuts via my tap, I found for my project that a piece of 12-gauge copper wire used as a lead-screw follower worked better.
- I needed the lead screws for the Da Vinci File Cutter. In this device, a trip hammer repeatedly impacts an iron blank as the work is advanced by the lead screw.
- Here is a [YouTube Link](#).

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